

APPENDIX B

Project-Wide Mitigation Measures and Procedures

2.2.11.1 Project-Wide Mitigation Measures and Procedures

Warren proposes to implement the following mitigation measures, procedures, and management requirements on public lands administered by the BLM to avoid land use impacts. On privately owned lands, the landowner would determine which measures would be applied, to what degree, and where. Warren would coordinate with the State of Wyoming concerning mitigation on state-owned lands. An exception to a mitigation measure and/or design feature may be approved on public land on a case-by-case basis when deemed appropriate by the BLM. An exception would be approved only after a thorough, site-specific analysis determined that the resource or land use for which the measure was put in place is not present or would not be significantly impacted.

2.2.11.1.1 Preconstruction Planning and Design Measures

- Warren and the BLM would make on-site interdisciplinary team inspections of each proposed and staked facility site (e.g., well sites), new access road, access road reconstruction area, and pipeline alignment projects so that site-specific recommendations and mitigation measures can be developed.
- New road construction and maintenance of existing roads in the PRPA would be accomplished in accordance with WSO BLM Manual 9113 Supplement, unless private landowners or the State of Wyoming specify otherwise.
- Warren would prepare and submit an APD for each drill site on federal leases to the BLM for approval prior to initiation of construction, and would be subject to additional environmental review. Prior to construction, Warren or its contractors would also submit Sundry Notices and/or ROW applications for pipelines and access road segments on federal leases. The APD would include a Surface Use Plan that would show the layout of the drill pad over the existing topography, dimensions of the pad, volumes and cross sections of cut and fill (when required), location and dimensions of reserve pit(s), and access road egress and ingress. The APD, Sundry Notice, and/or ROW application plan would also itemize project administration, time frame, and responsible parties.
- Construction activities would be slope-staked when required by the BLM for steep and/or unstable slopes and BLM approval would be received prior to start of construction.

2.2.11.2 Resource-Specific Requirements

Warren proposes to implement the following resource-specific mitigation measures, procedures, and management requirements on public lands managed by the BLM.

2.2.11.2.1 Range Resources/Other Land Uses/Invasive/Noxious Weed Monitoring and Management

Mitigation requirements listed under Soils, Vegetation and Wetlands, and Wildlife also apply to Range Resources and Other Land Uses.

- Warren would coordinate with the affected livestock operators to ensure that livestock control structures remain functional during drilling and production operations.
- The best known weed prevention measures, as outlined in Appendix 4 of *Partners Against Weeds: An Action Plan for the Bureau of Land Management*, would be incorporated in the mitigation requirements.
- Invasive/noxious weed management strategies would be incorporated into the preconstruction planning and design process for all surface disturbance activities, including road, pipeline, well pad and ancillary facility construction.
- Warren would inventory and remove existing invasive/noxious weed and/or seed sources that could be transported into relatively weed-free areas by passing vehicles.
- Muddy off-road equipment would be cleaned before moving into relatively weed-free areas.
- Warren would minimize removal of native vegetation during construction of roads, pipelines, well pads and ancillary facilities.
- Disturbed areas would be stabilized and vegetation reestablished on all bare ground using mixtures and treatment guidelines prescribed in the approved APD/ROW as soon as practical to minimize weed spread.
- Gravel, top soil and fill would be stored in relatively weed-free areas.
- Where possible, Warren would limit access to all disturbed sites that are not yet re-vegetated.
- Disturbed and re-vegetated sites would be monitored to ensure that desired species are thriving and invasive/noxious weeds are not present, and treated, reseeded and fertilized as necessary.
- Roads and other disturbed areas would be monitored throughout the life of the project and for three years after reclamation to insure that invasive/noxious weeds are identified and eradicated.
- Warren would ensure that all invasive/noxious weed control measures adhere to standards in the Decision Record for the Rock Springs District Noxious Weed Control EA or applicable updated guidance.

- Warren would cooperate with the Sweetwater County Weed and Pest District to identify appropriate methods of weed control.
- Before treatment of invasive/noxious weeds, Warren would submit a Pesticide Use Proposal (PUP) to the BLM for approval, and ensure that all pesticides intended for use are on the BLM's approved label list for use on public lands (the label list is updated each year). The PUP(s) must be approved prior to any spraying. PUP's can be approved for up to a three year period.
- Warren would ensure that pesticide applicators are certified with an up to date Pesticide Applicator's License before performing spraying work.
- Pesticide Application Records would be submitted to the BLM RSFO each year. Treatments would comply with all federal and state regulations regarding use of pesticides, including those outlined in the following:
 - BLM Information Bulletin No. WY-98-106, *Weed Management Guidance*;
 - Instruction Memorandum No. WY-99-29, *Executive Order #13112 : Invasive Species*;
 - Washington Information Bulletin No. 99-110; *Submission of Pesticide Use Report*;
 - Information Bulletin No. WY-2000-25: *Annual Pesticide Use Report*.

2.2.11.2.2 Air Quality

- All BLM conducted or authorized activities (including natural gas development alternatives) must comply with applicable local, state, tribal and Federal air quality regulations and standards. Warren would adhere to all applicable ambient air quality standards, permit requirements (including preconstruction, testing, and operating permits), motorized equipment and other regulations, as required by the State of Wyoming, Department of Environmental Quality, Air Quality Division (WDEQ-AQD).
- Warren would not allow burning garbage or refuse at well locations or other facilities. Any other open burning would be conducted under the permitting provisions of Chapter 10, Section 2 of the Wyoming Air Quality Standards and Regulations.
- On Federal land, Warren would initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ-AQD. These concerns include, but are not limited to, potential exceedances of applicable air quality standards. The BLM would approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved source(s).

- Warren would obtain the appropriate permits and/or follow state protocol for approval of all on-site temporary or permanent equipment used in association with this project from the WDEQ-AQD.

2.2.11.2.3 Transportation

- Existing and local roads would be used as collectors whenever possible. Standards for road design would be consistent with WSO BLM Manual 9113 Supplement. Newly constructed *Resource Roads*, spur roads that provide point access and connect to local or collector roads, would be crowned and ditched with a 14-foot wide travelway and a design speed of 30 mph.
- On Federal land, Warren would initiate immediate abatement of fugitive dust (by application of water, chemical dust suppressants, or other measures) when air quality, soil loss, or safety concerns are identified by the BLM or the WDEQ-AQD. The BLM would approve the control measure, location, and application rates. If watering is the approved control measure, the operator must obtain the water from state-approved source(s).
- Roads not required for routine operation and maintenance of producing wells and ancillary facilities would be permanently blocked, reclaimed, and revegetated.
- Areas with important resource values, steep slopes and fragile soils would be avoided where possible in planning for new roads.

2.2.11.2.4 Minerals/Paleontology

Mitigation measures presented in the Soils and Water Resources sections would avoid or minimize many of the potential impacts to the surface and mineral resources. Protection of subsurface mineral resources from adverse impacts would be provided by the BLM casing and cementing policy contained in Onshore Order No. 2.

Impacts to fossil resources can be reduced by the implementation of paleontologic resource mitigation measures. These measures include the following:

Field Survey. Detailed preconstruction field surveys should be conducted within the PRPA in areas where construction would disturb surface exposures or subsurface bedrock of the Green River, Wasatch, and Fort Union Formations. Field surveys would involve a visual examination of the formation by a BLM-approved paleontologist in areas of exposure, and would recommend additional mitigation, if necessary. A report of findings, including recommendations for further mitigation, or negative findings must be filed by the BLM-approved paleontologist and approved by the BLM before work can be authorized. After review of the paleontologist's report, the BLM will determine the need for any additional mitigation measures. These could include collection of specimens and monitoring of excavation.

Worker Instruction. Construction personnel would be instructed about the types of fossils they could encounter and the steps to take if they uncover fossils during construction. Workers would

be informed that destruction, collection or excavation of vertebrate, scientifically-significant invertebrate or plant fossil materials from federal land without a federal permit is illegal, and that they and their company could face charges if they knowingly destroy or remove fossils.

Discovery Contingency. Should fossil resources be uncovered during surface disturbance associated with the Proposed Action, authorized personnel should immediately notify the BLM and work should cease immediately in the area of the discovery until authorized by the BLM Authorized Officer (AO). A BLM-approved paleontologist may be needed to evaluate the fossil material. If fossil remains of significance are identified, then additional mitigation measures may be required. Additional mitigation could include avoidance, collection, identification, or monitoring, and may delay resumption of work.

If field surveys do not reveal significant fossils, no additional work for paleontology may be recommended in the areas surveyed.

2.2.11.2.5 Soils

Other mitigation measures listed herein would also apply to Soils. The primary mitigation activities concerning Soils are as follows:

- Reduce the area of disturbance to the absolute minimum necessary for construction and production operations, while providing for the safety of the operation.
- Where feasible, locate pipelines immediately adjacent to roads in order to avoid creating separate areas of disturbance and reduce the total area of disturbance.
- Avoid using frozen or saturated soils as construction material.
- "Limiting disturbance on slopes greater than 25%." (USDI-BLM, 1997, p. 159)
- Design cutslopes in a manner that would allow retention of topsoil, surface treatment such as mulch, and subsequent revegetation.
- Selectively strip and salvage topsoil or the best suitable medium for plant growth from all disturbed areas to a minimum depth of 6 inches on all well pads.
- Where possible, minimize disturbance to vegetated cuts and fills on existing roads that are improved.
- Install runoff and erosion control measures such as water bars, berms, and interceptor ditches if needed.
- Install culverts for ephemeral and intermittent drainage crossings. Design all drainage crossing structures to carry the 25- to 50-year discharge event, or as otherwise directed by the BLM.

- Implement minor routing variations during access road layout to avoid steep slopes adjacent to ephemeral or intermittent drainage channels. Disturbance would not encroach within 500 feet of perennial surface water and/or riparian areas and 100 feet of the thalweg in ephemeral channels. (See item 3 in Section 2.1.11.2.6 below).
- Include adequate drainage control devices and measures in the road design (e.g., road berms and drainage ditches, diversion ditches, cross drains, culverts, out-sloping, and energy dissipators) at sufficient intervals and intensities to adequately control and direct surface runoff above, below, and within the road environment to avoid erosive concentrated flows. In conjunction with surface runoff or drainage control measures, use erosion control devices and measures such as temporary barriers, ditch blocks, erosion stops, mattes, mulches, and vegetative covers. Implement a revegetation program as soon as possible to re-establish the soil protection afforded by a vegetal cover.
- Upon completion of construction activities, restore topography to near pre-existing contours at the well sites, along access roads and pipelines, and other facilities sites; replace up to 6 inches of topsoil or suitable plant growth material over all disturbed surfaces; apply fertilizer as required; seed; and mulch.

2.2.11.2.6 Water Resources

Other mitigation measures listed in the Soils, and Vegetation and Wetlands sections would also apply to Water Resources. The primary mitigation activities concerning Water Resources are as follows:

- Limit construction of drainage crossings to no-flow periods or low-flow periods.
- Minimize the area of disturbance within perennial, ephemeral and intermittent drainage channel environments.
- Surface disturbing activities would avoid the area within 500 feet of or on 100-year floodplains, wetlands, riparian areas, or perennial streams and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages. Proposals for linear crossings in these areas would be considered on a case-by-case basis.
- Design channel crossings to minimize changes in channel geometry and subsequent changes in flow hydraulics.
- Maintain vegetation barriers occurring between construction activities and perennial, ephemeral and intermittent flows or channels, with the exception of approved right angle linear feature crossings, which, with the exception of the active travel path of a roadway, should be reclaimed.
- Design and construct interception ditches, sediment traps/silt fences, water bars, silt fences and revegetation and soil stabilization measures if needed.

- Construct channel crossings by pipelines such that the pipe is buried a minimum of four feet below the channel bottom.
- Regrade disturbed channel beds to the original geometric configuration and replace the same or very similar bed material.
- Case wells during drilling, and case and cement all wells in accordance with Onshore Order No. 2 to protect all high quality water aquifers. High quality water aquifers are aquifers with known water quality of 10,000 total dissolved solids or less. Include well casing and welding of sufficient integrity to contain all fluids under high pressure during drilling and well completion. Further, wells would adhere to the appropriate BLM cementing policy.
- Construct the reserve pits in cut rather than fill materials, or compact and stabilize fill. Inspect the subsoil material of the pit to be constructed in order to assess soil stability and permeability, and determine whether reinforcement and/or lining are required. If lining is required, as specified in the GRRMP (50 feet or less to ground water and permeability greater than 10^{-7} cm/hour), line the reserve pit with a reinforced synthetic liner at least 12 mils in thickness with a bursting strength of 175 x 175 pounds per inch. Reserve Pit lining requirements will be handled on a case-by-case basis during the APD process taking into consideration water quality, soil permeability, and depth to groundwater.
- Maintain two feet of freeboard on all reserve pits to ensure the reserve pits are not in danger of overflowing. Shut down drilling operations until the problem is corrected if leakage is found outside the pit.
- Extract hydrostatic test water used in conjunction with pipeline testing and all water used during construction activities from sources with sufficient quantities and through appropriation permits approved by the State of Wyoming.
- Discharge hydrostatic test water in a controlled manner onto an energy dissipator. The water is to be discharged onto undisturbed land that has vegetative cover, if possible, or into an established drainage channel. Prior to discharge, treat or filter the water to reduce pollutant levels or to settle out suspended particles if necessary. If discharged into an established drainage channel, the rate of discharge would not exceed the capacity of the channel to safely convey the increased flow, and the hydrostatic test water quality would be equal to or better than the receiving waters. Coordinate all discharge of test water with the Wyoming State Engineer's Office, the Wyoming Department of Environmental Quality, Water Quality Division (WDEQ-WQD), and the BLM.
- Discharge all concentrated water flows within access road ROWs onto or through an energy dissipator structure (e.g., riprapped aprons and discharge points) and into undisturbed vegetation.
- Develop and implement a pollution prevention plan for storm water runoff at drill sites, as required per WDEQ-WQD storm water National Pollution Discharge Elimination

System permit requirements. The WDEQ-WQD requires operators to obtain a field permit for fields of 20 wells or more.

- Exercise stringent precautions against pipeline breaks and other potential accidental discharges of toxic chemicals into adjacent streams. If liquid petroleum products are stored on-site in sufficient quantities (per criteria contained in 40 CFR 112), a Spill Prevention Control and Countermeasures plan would be developed in accordance with 40 CFR 112, dated December 1973.
- Coordinate all crossings or encroachments of waters of the U.S. with the Army Corps of Engineers (COE).
- Discharge all water produced from the gas bearing formation(s) into tanks, pumps, pipelines, and existing injection wells to preclude contamination of surface waters with high mineral content formation water.

2.2.11.2.7 Fisheries

- No fisheries mitigation is needed beyond that indicated under Water Resources and Special Status Species Fish.

2.2.11.2.8 Vegetation and Wetlands

Other mitigation measures under Soils and Water Resources would also apply to Vegetation and Wetlands. The primary mitigation activities concerning Vegetation and Wetlands are as follows:

- File noxious weed monitoring forms with the BLM and implement, if necessary, a weed control and eradication program.
- Evaluate all project facility sites for occurrence and distribution of waters of the U.S., special aquatic sites, and jurisdictional wetlands. All project facilities would be located outside of these sensitive areas. If complete avoidance is not possible, minimize impacts through modification and minor relocations. Coordinate activities that involve dredge or fill into wetlands with the COE.

2.2.11.2.9 Wildlife

The primary mitigation activities concerning Wildlife are as follows:

- During reclamation, establish a variety of forage species that are useful to resident herbivores.
- Prohibit unnecessary off-site activities of operational personnel in the vicinity of the drill sites. Inform all project employees of applicable wildlife laws and penalties associated with unlawful take and harassment.

- Limit construction activities according to BLM authorizations within big game crucial winter range from November 15 to April 30.
- Complete a raptor survey of the PRPA prior to construction to ensure that well sites are located away from potential conflict areas.
- Survey and clear well sites within one mile of raptor nests identified in the raptor survey prior to the commencement of drilling and construction during the raptor nesting period (February 1 through July 31).
- When an 'active' raptor nest is within one mile (Ferruginous Hawk) or ½ mile (all other raptors) of a proposed well site, restrict construction during the critical nesting season for that species.
- Do not perform construction activities within 0.25 mile of existing sage grouse leks at any time except as authorized in writing by exception, including documented supporting analysis, by the Authorizing Official. All surface disturbances would abide by sage-grouse stipulations as detailed in the GRRMP ROD and supporting documents.
- Provide for sage grouse lek protection during the breeding, egg-laying and incubation period (March 1 - June 30) by restricting construction activities within a two-mile radius of active sage grouse leks. Exceptions may be granted if the activity would occur in unsuitable nesting habitat.

2.2.11.2.10 Special Status Species

The primary mitigation activities concerning Special Status Species are as follows:

Special Status Plants

- Employ site-specific recommendations developed by the BLM IDT for staked facilities.
- Minimize impacts due to clearing and soil handling.
- Monitor and control noxious weeds.
- Comply with Section 404(b)(1) guidelines of the federal Clean Water Act.
- Perform clearance surveys for plant species of concern.

Special Status Animals

- Implement measures discussed in Chapter 4 (Section 4.8) in compliance with the Endangered Species Act.

2.2.11.2.11 Visual Resources

The primary mitigation activities concerning Visual Resources are as follows:

- Utilize existing topography, vegetation, and color that mimic the existing environment to screen roads, pipeline corridors, drill rigs, well heads, and production facilities from view.
- Paint well and central facilities site structures with flat colors (e.g., Carlsbad Canyon or Desert Brown) that blend with the adjacent surrounding undisturbed terrain, except for structures that require safety coloration in accordance with Occupational Safety and Health Administration (OSHA) requirements.

2.2.11.2.12 Noise

Mitigation concerning Noise is as follows:

- Muffle and maintain all motorized equipment according to manufacturers' specifications.

2.2.11.2.13 Recreation

Measures under Wildlife, Transportation, Soils, Health and Safety, and Water Resources could apply to Recreation. The primary mitigation activities concerning Recreation are as follows:

- Minimize conflicts between project vehicles and equipment, and recreation traffic by posting appropriate warning signs, implementing operator safety training, and requiring project vehicles to adhere to low speed limits.
- Monitor recreational use of roads, especially during hunting seasons.

2.2.11.2.14 Socioeconomics

The primary mitigation activities concerning Socioeconomics are as follows:

- Implement hiring policies that would encourage the use of local or regional workers who would not have to relocate to the area.
- Coordinate project activities with ranching operations to minimize conflicts involving livestock movement or other ranch operations. This would include scheduling of project activities to minimize potential disturbance of large-scale livestock movements. Establish effective and frequent communication with affected ranchers to monitor and correct problems and coordinate scheduling.
- Warren and its subcontractors would obtain Sweetwater County sales and use tax licenses for purchases made in conjunction with the project so that project-related sales and use tax revenues would be distributed to Sweetwater County.

2.2.11.2.15 Cultural Resources

The primary mitigation activities concerning Cultural Resources are as follows:

- Conduct a Class III inventory prior to any ground disturbing activities and identify sites considered eligible for or already on the National Register of Historic Places (NRHP).
- If a site is considered eligible for or is already on the NRHP, avoidance is the preferred method for mitigating adverse effects to that property.
- Mitigation of adverse effects to cultural/historical properties that cannot be avoided would be accomplished by the preparation of a cultural resources mitigation plan.
- If unanticipated or previously unknown cultural resources are discovered at any time during construction, all construction activities would halt and the BLM AO would be immediately notified. Work would not resume until a Notice to Proceed is issued by the BLM AO.

2.2.11.2.16 Health and Safety

Measures listed under Air Quality and Water Quality would also apply to Health and Safety. The primary mitigation activities concerning Health and Safety are as follows:

- Sanitation facilities installed on the drill sites and any resident camp site locations would be approved by the WDEQ-WQD.
- To minimize undue exposure to hazardous situations, require measures that would preclude the public from entering hazardous areas and place warning signs alerting the public of truck traffic.
- Haul all garbage and rubbish from the drill site to a State-approved sanitary landfill for disposal. Collect and store any garbage or refuse materials on location prior to transport in containers approved by the BLM.
- Spill Prevention Control and Countermeasure Plans would be written and implemented as necessary in accordance with 40 CFR 112 to prevent discharge into navigable waters of the United States.
- Any hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), would be transported and/or disposed of in accordance with all applicable federal, state, and local regulations.

- During construction and upon commencement of production operations, Warren would have a chemical or hazardous substance inventory for all such items that may be at the site. Warren would institute a Hazard Communication Program for its employees and would require subcontractor programs in accordance with the Occupational Safety and Health Administration, 29 CFR 1910.1200. These programs are designed to educate and protect the employees and subcontractors with respect to any chemicals or hazardous substances that may be present in the work place. It would be required that as every chemical or hazardous material is brought on location, a Material Safety Data Sheet would accompany that material and would become part of the file kept at the field office, as required by 29 CFR 1910.1200. All employees would receive the proper training in storage, handling, and disposal of hazardous substances.
- Chemical and hazardous materials would be inventoried and reported in accordance with the Superfund Amendments and Reauthorization Act Title III, 40 CFR 335, if quantities exceeding 10,000 pounds or the threshold planning quantity are to be produced or stored in association with the Proposed Action. The appropriate Section 311 and 312 forms would be submitted at the required times to the State and County Emergency Management Coordinators and the local fire departments.
- Warren plans to design operations to severely limit or eliminate the need for Extremely Hazardous substances. Warren also plans to avoid the creation of hazardous wastes, as defined by RCRA, wherever possible.